



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,215	12/27/2000	Patrick L. Connor	10599-367001	5294
20985	7590	05/03/2004		
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			EXAMINER	

SHAW, JOSEPH D

ART UNIT PAPER NUMBER

2141

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/749,215	CONNOR, PATRICK L.
	<b>Examiner</b>	<b>Art Unit</b>
	Joseph D Shaw	2141

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 27 December 2000.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-35 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-35 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 27 December 2000 is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_.  
\_\_\_\_\_

Art Unit: 2141

**DETAILED ACTION**

**Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-6, 15-18, and 23-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kalkunte et al. (5,859,980).

a. As per claim 1, Kalkunte teaches:

determining the length of a message received from a sending network (col. 4, lines 6-11); and

initiating relay of said message to a receiving network when a received portion of said message exceeds a relay threshold (packet transmission is initiated when there are enough bytes in the FIFO equal to the transmit threshold; col. 4, lines 12-30).

b. Claims 15 and 24 contain similar limitations to claim 1 and are rejected on the same grounds as claim 1. As per claim 15, Kalkunte further teaches:

Art Unit: 2141

a first memory element in communication with a sending network and a receiving network (the FIFO buffer memory for storing transmitted packets; col. 4, lines 12-30).

c. As per claim 2, Kalkunte further teaches:

determining said relay threshold on the basis of said length (total time to fill and remove packets from FIFO are calculated based on packet length, the time difference between filling and removing is added to a minimum threshold to create a new adaptive transmit start point; col. 5, line 15 - col. 6, line 19).

d. Claims 16 and 25 contain similar limitations to claim 2 and are rejected on the same grounds as claim 2.

e. As per claim 3, Kalkunte further teaches:

determining a length of said message on the basis of information contained in the header of said message (col. 4, lines 6-11).

f. Claims 17 and 26 contain similar limitations to claim 3 and are rejected on the same grounds as claim 3.

g. As per claim 7, Kalkunte further teaches:

said sending network being a network served by a bus (PCI bus interface passes data packets on a byte-by-byte basis to the transmit FIFO; col. 3, line 44 - col. 4, line 5).

Art Unit: 2141

h. As per claim 8, Kalkunte further teaches:

    said receiving network being a packet-switched network (interface between a local bus and an Ethernet-based network; interface receives data from PCI bus for transmission onto the network bus; col. 3, line 44 - col. 4, line 15).

i. Claim 19 contains similar limitations to claims 7 and 8 and is rejected on the same grounds as claims 5 and 6.

j. Claim 29 contains similar limitations to claim 8 and is rejected on the same grounds as claim 8.

k. As per claim 9, Kalkunte further teaches determining a relay threshold based on:

    a data transmission rate associated with said sending network and a data receiving rate associated with said receiving network (total time to fill and remove packets from FIFO are calculated based on arrival rate and removal rate of bytes to the FIFO queue, the time difference between filling and removing is added to a minimum threshold to create a new adaptive transmit start point; col. 5, line 15 - col. 6, line 19).

l. Claims 20 and 30 contain similar limitations to claim 9 and are rejected on the same grounds as claim 9. As per claim 20, Kalkunte further teaches:

    a second memory element for storage of the data transmission rates being in communication with the relay threshold determining

Art Unit: 2141

process (inherent that a device performing the calculations required by Kalkunte has memory).

m. As per claim 12, Kalkunte further teaches:

evaluating a quantity derived from said data transmission rate and said data receiving rate and weighting said quantity by said length of said message (total time to fill and remove packets from FIFO are calculated based on arrival rate and removal rate of bytes to the FIFO queue, multiplied by the length of the packet, the time difference between filling and removing is added to a minimum threshold to create a new adaptive transmit start point; col. 5, line 15 - col. 6, line 19).

n. Claims 21 and 33 contain similar limitations to claim 12 and are rejected on the same grounds as claim 12.

o. As per claim 23, Kalkunte teaches:

a controller having a first port and a second port (PCI bus interface unit and AUI port for IEEE 802.3 Ethernet communications; col. 3, lines 44-62; Fig. 1);

said controller being adapted for determining a relay threshold on the basis of a length of a message received at said first port (total time to fill and remove packets from FIFO are calculated based on packet length, the time difference between filling and removing is added to a minimum threshold to create a new adaptive transmit start point; col. 5, line 15 - col. 6, line 19);

Art Unit: 2141

      relaying said message through said second port when a buffered portion of said message has a length exceeding said relay threshold (packet transmission is initiated when there are enough bytes in the FIFO equal to the transmit threshold; col. 4, lines 12-30);

      a bus in communication with one of said first port and said second port (PCI bus interface unit; col. 3, lines 44-62); and

      a host memory element in communication with said bus (PCI bus interface unit is under control of the DMA buffer management unit and receives DMA bursts; col. 3, line 63 - col. 4, line 5).

3.. Claims 1, 4-6, 14-15, 18, 22, 24, and 27-28 rejected under 35 U.S.C. 102(e) as being anticipated by Kuo et al. (6,105,079).

p. As per claim 1, Kuo teaches:

      determining the length of a message received from a sending network (col. 10, lines 33-35); and

      initiating relay of said message to a receiving network when a received portion of said message exceeds a relay threshold (data frame length is compared to a threshold and if longer than the threshold value, a long bit is generated that initiates a host bus transfer interrupt; col. 10, line 42 - col. 11, line 23).

q. Claims 15 and 24 contain similar limitations to claim 1 and are rejected on the same grounds as claim 1. As per claim 15, Kuo further teaches:

      a first memory element in communication with a sending network and a receiving network (buffer for storing received data frames from a network and for sending data frames to a host; col. 2, lines 45-60).

Art Unit: 2141

r. As per claim 4, Kuo further teaches:

determining a length of said message on the basis of information obtained as part of a transmission protocol (Ethernet protocol, IEEE 802.3; col. 10, lines 33-42).

s. Claim 27 contains similar limitations to claim 4 and is rejected on the same grounds as claim 4.

t. As per claim 5, Kuo further teaches:

said receiving network being a network served by a bus (long bit initiates a host bus transfer interrupt, for example a DMA, to the host CPU via the PCI bus; col. 11, lines 5-39).

Claim 28 contains similar limitations to claim 5 and is rejected on the same grounds as claim 5.

u. As per claim 6, Kuo further teaches:

said sending network being a packet-switched network (controller receives IEEE 802.3 data frames; col. 10, lines 33-39).

v. Claim 18 contains similar limitations to claims 5 and 6 and is rejected on the same grounds as claims 5 and 6.

w. As per claim 14, Kuo further teaches:

obtaining said relay threshold from a look-up table (select between stored thresholds based on the long bit; wherein the long bit

Art Unit: 2141

was previously taught to be derived by the length of the data frame; col. 10, lines 3-5).

x. Claims 22 and 35 contain similar limitations to claim 14 and are rejected on the same grounds as claim 14.

***Claim Rejections - 35 USC § 103.***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalkunte et al. (5,859,980) in view of Dixon et al. (4,344,132).

y. As per claim 10, Kalkunte teaches the claimed invention described above. However, Kalkunte does not explicitly teach determining an effective data transfer rate based on the likelihood that receipt of a message would be interrupted. Dixon teaches:

determining a likelihood with which receipt of a message from a sending network will be interrupted (a bus utilization monitor recognizes when a bus is freer (less interruptions from other devices trying to send data) or not as free (more interruptions by other devices trying to send data); col. 5, line 31 - col. 6, line 13); and

determining an effective transmission rate on the basis of said likelihood (multiple devices contending for use of a bus can reduce the

Art Unit: 2141

effective bus data transfer rate for a given I/O device; col. 1, lines 11-43; col. 6, lines 14-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the determination of the effective transfer rate of the sending network by determining the likelihood of interruption, as taught by Dixon, in the Kalkunte invention, because knowing this rate would allow the controller for a particular device change the rate the particular device transmits data to be adapted to the current effective transfer rate, reducing the chances for overruns, as taught by Dixon (speed control circuitry responsive to the data transfer activity of the data transfer circuitry for causing the device to operate at different speeds for different values of bus availability; col. 1, lines 11-43; col. 5, line 31 - col. 6, line 13).

Claim 31 contains similar limitations to claim 10 and is rejected on the same grounds as claim 10.

6. Claims 11 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalkunte et al. (5,859,980) in view of Dixon et al. (4,344,132) as applied to claims 10 and 31 above, and further in view of Haumont et al. (US 2004/0071086).

z. As per claim 11, Kalkunte discloses the claimed invention modified by Dixon as described above. However, the modified Kalkunte invention does not explicitly teach determining the likelihood of interruption based on an analysis of statistics of the usage of said networks. Haumont teaches:

Art Unit: 2141

analyzing statistics on usage of a sending network and/or receiving network (history of congestion risks (interruptions); page 6, paragraph 0070).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the analysis of statistical information regarding the congestion (interruptions) of networks, as taught by Haumont, when determining the effective bandwidth in the modified Kalkunte invention because statistical analysis would allow the controller to analyze the historical patterns of congestions and categorize them accordingly, as taught by Haumont (page 6, paragraph 0070), allowing the controller to make decisions based on what category of congestion it is expecting.

aa. Claim 32 contains similar limitations to claim 11 and is rejected on the same grounds as claim 11.

7. Claims 13 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo et al. (6,105,079).

bb. As per claim 13, Kuo further teaches:

    said receiving network including a bus having a bus width (inherent the buses in Kuo have a bus width).

    However, Kalkunte does not explicitly teach constraining said relay threshold to be a multiple of said bus width. "Official Notice" is taken that both the concept and advantages of having the relay threshold be a multiple of the bus width of the receiving network are well known and expected in the art.

Art Unit: 2141

It would have been obvious to one of ordinary skill in the art at the time of the invention to constrain the thresholds taught in Kuo to be a multiple of the bus width of the receiving network because otherwise, when a threshold was reached and data transferred, some bus transactions would contain fewer bits than the size of the bus, making the costly overhead of the bus transaction cost even more per bit, thus reducing communication efficiency.

cc. Claim 34 contains similar limitations to claim 13 and is rejected on the same grounds as claim 13.

#### **Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D Shaw whose telephone number is 703-305-0094. The examiner can normally be reached on Monday - Thursday and alternate Fridays, 7am - 4pm.
9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 703-305-4003. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access

Art Unit: 2141

to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph Shaw  
Examiner  
AU 2141



RUPAL DHARIA  
SUPERVISORY PATENT EXAMINER